

SynthMaster 2.6 User Manual

Version 2.6.16

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AU Version of SynthMaster is built using Symbiosis by [NuEdge Development](#).
XML processing is done by using TinyXML
HTTP/FTP processing is done by using LibCurl

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Introduction

System Requirements

SynthMaster 2.6 comes in the following formats:

Format	System Requirements	DAW Requirements
VST Instrument & Effect	Windows 7 and above MacOSX 10.6 and above 2 GB RAM, 2 GHz CPU	VST Host supporting VST 2.4 plugins
AU Instrument & Effect	MacOSX 10.6 and above 2 GB RAM, 2 GHz CPU	AU Host application
RTAS Instrument	Windows 7 and above MacOSX 10.6 and above 2 GB RAM, 2 GHz CPU	ProTools 9 ProTools 10
AAX Instrument	Windows 7 and above MacOSX 10.6 and above 2 GB RAM, 2 GHz CPU	ProTools 10.3.6 and above ProTools 11 and above

Downloading the Full Installer

SynthMaster 2.6 full installer can be downloaded at:

- Windows-32 bits: <http://www.kv331audio.com/DownloadFile.aspx?fileID=42>
- Windows-64 bits: <http://www.kv331audio.com/DownloadFile.aspx?fileID=48>
- Mac OSX (32/64bits): <http://www.kv331audio.com/DownloadFile.aspx?fileID=43>

This installer contains the latest binaries and all the data files necessary to install SynthMaster 2.6.

Downloading the Latest Update

The latest update of SynthMaster 2.6 installer can be downloaded at:

- Windows-32 bits: <http://www.kv331audio.com/DownloadFile.aspx?fileID=44>
- Windows-64 bits: <http://www.kv331audio.com/DownloadFile.aspx?fileID=49>
- Mac OSX (32/64bits): <http://www.kv331audio.com/DownloadFile.aspx?fileID=53>

This update, unlike the full installer, contains only the latest binaries and data files for SynthMaster 2.6.

To start your download you should enter your registered email address and serial number:

File Download

Before downloading 'synthmaster25alphawindows.zip', please enter the following information:

E-mail Address:
Serial Number:

Forgot Your Serial Number?

If you forgot your serial number, it is very easy to retrieve it. Just go to <http://www.kv331audio.com/requestlicensefile.aspx>

Request Serial Number

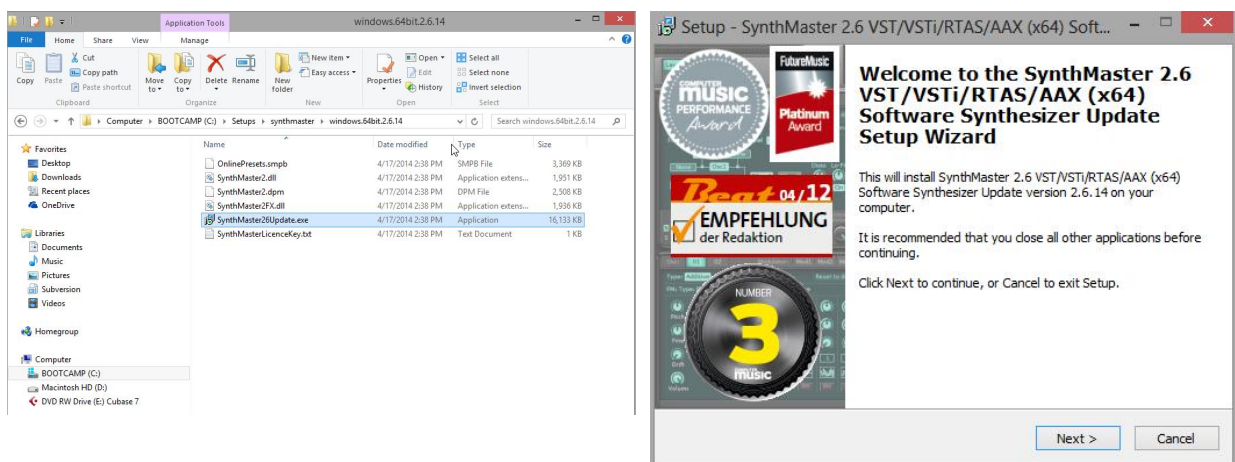
Please enter the e-mail address you used when purchasing SynthMaster to receive your serial number

E-Mail Address

enter your registered email address, and that's it. You'll receive your serial number plus the above download links in a couple of minutes!

Installing Latest Version

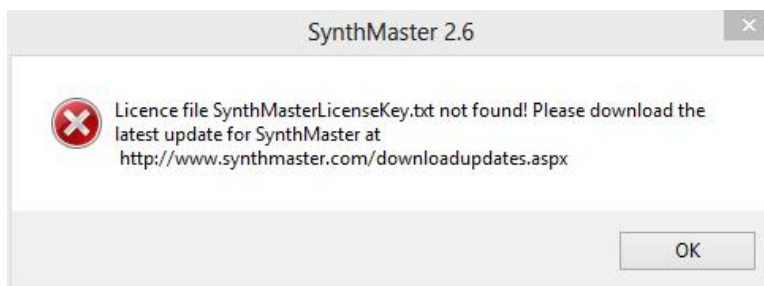
Once you download the zip archive containing SynthMaster 2.6 setup files, simply extract its contents to a temporary location and run the setup application: (SynthMaster26Setup.exe on Windows, SynthMaster26Setup.pkg on MacOSX)



By default, SynthMaster will be installed under the following directories:

- Windows: **C:\Program Files\Vstplugins\KV331 Audio**
- MacOSX: **/Library/Application Support/KV331 Audio/SynthMaster**

On MacOSX, you might get the following warning message after you install SynthMaster, and run your DAW application:



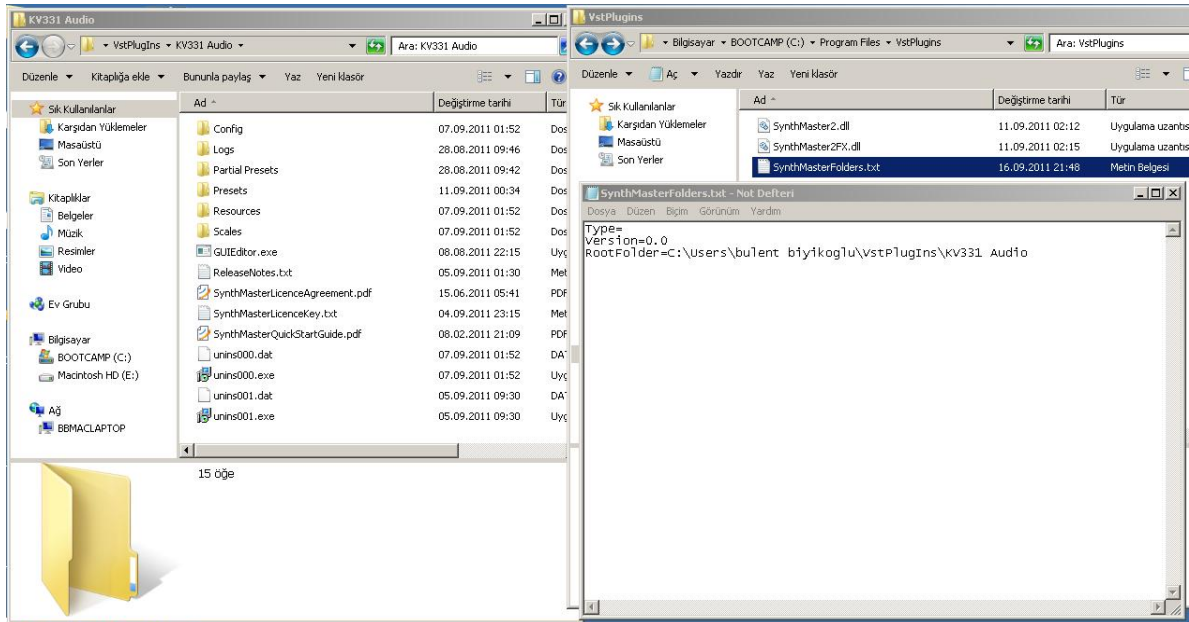
In that case, please copy the following files manually:

- SynthMasterLicenseKey.txt to -> /Library/Application Support/KV331 Audio/SynthMaster
- SynthMaster2.component to -> /Library/Audio/Plug-Ins/Components
- SynthMaster2FX.component to -> /Library/Audio/Plug-Ins/Components
- SynthMaster2.vst to -> /Library/Audio/Plug-Ins/VST
- SynthMaster2FX.vst to -> /Library/Audio/Plug-Ins/VST
- SynthMaster2.dpm to -> /Library/Application Support/Digidesign/DAE/Plug-Ins

Changing Data Folder

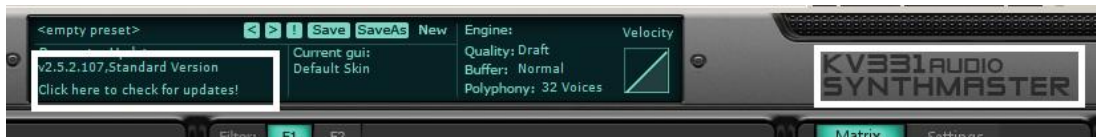
If you want to place SynthMaster data files in a different folder, there is an easy way to do that:

- Copy all SynthMaster folder/files except SynthMaster2.dll, SynthMaster2FX.dll and SynthMasterFolders.txt into the new folder
- Open up the SynthMasterFolders.txt file using a text editor, and change the following line:
RootFolder=<new folder path goes here>
- Then save the SynthMasterFolder.txt file and you're done!



Checking for Updates


To check for updates, simply move the mouse over the "KV331 Audio SynthMaster" text area on the header, SynthMaster will display the current version on the tooltip area:



Next, click on the “KV331 Audio SynthMaster” text area and SynthMaster will connect to the KV331 Audio web site to get the latest version number:



If your version is not latest, you'll be directed to our [downloads page](#):



USER AREA


Download Updates


Download Expansions


Request Serial Number


Download Updates


Latest updates for registered users of SynthMaster:


 SynthMaster 2.6 VST/VSTi/RTAS for Windows Installer		
File: synthmaster26windowssetup.zip	Size: 185 MB	Version: 2.6.12
<small>Registered users can download this file by entering their e-mail address and serial numbers Please extract this zip archive to a temporary location and run SynthMaster25Setup.exe to install SynthMaster 2.5 plugin on your computer.</small>		

 SynthMaster 2.6 VST/VSTi/AU/RTAS for MacOSX Installer		
File: synthmaster26macosxsetup.zip	Size: 210 MB	Version: 2.6.12
<small>Registered users can download this file by entering their e-mail address and serial numbers This archive file contains the VST, VSTi and AU versions of SynthMaster 2.5. Extract it to a temporary location and then click on the SynthMaster25Setup.pkg file inside to install SynthMaster.</small>		

 SynthMaster 2.6 VST/VSTi/RTAS for Windows x64 Installer		
File: synthmaster26windows64setup.zip	Size: 185 MB	Version: 2.6.12
<small>Registered users can download this file by entering their e-mail address and serial numbers Please extract this zip archive to a temporary location and run SynthMaster25Setup.exe to install SynthMaster 2.5 x64 plugin on your computer.</small>		

 SynthMaster 2.6 Player VSTi/RTAS for Windows Installer		
File: synthmaster26playerwindowssetup.zip	Size: 137 MB	Version: 2.6.13
<small>Registered users can download this file by entering their e-mail address and serial numbers Please extract this zip archive to a temporary location and run SynthMaster26PlayerSetup.exe to install SynthMaster 2.6 Player plugin on your computer.</small>		

 SynthMaster 2.6 Player VSTi/RTAS for Windows x64 Installer		
File: synthmaster26playerwindows64setup.zip	Size: 137 MB	Version: 2.6.13
<small>Registered users can download this file by entering their e-mail address and serial numbers Please extract this zip archive to a temporary location and run SynthMaster26PlayerSetup.exe to install SynthMaster 2.6 Player plugin on your computer.</small>		

 SynthMaster 2.6 Player VSTi/AU/RTAS for MacOSX		
File: synthmaster26playermacosxsetup.zip	Size: 152 MB	Version: 2.6.13
<small>Registered users can download this file by entering their e-mail address and serial numbers Please extract this zip archive to a temporary location and run SynthMaster26PlayerSetup.pkg to install SynthMaster 2.6 Player plugin on your computer.</small>		

Getting Started with SynthMaster

Now that we you've installed SynthMaster, it's time to explore it!

Let's start by instantiating a SynthMaster instance in our DAW application:



SynthMaster opens up with its “Default” skin. One of the unique features of SynthMaster is that it support multiple skins. You can even edit the skins that come with SynthMaster and customize your own skins, with the Interface Editor that comes with SynthMaster



Exploring Different Faces of SynthMaster

As we said above, SynthMaster support multiple skins. To explore its skins, move your mouse over the skin selector



And then click on the skin name to change the current skin:



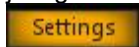
For the skin change to be effective, you need to close and reopen the plugin window. Once you close and reopen the window, SynthMaster will open up with the new skin:



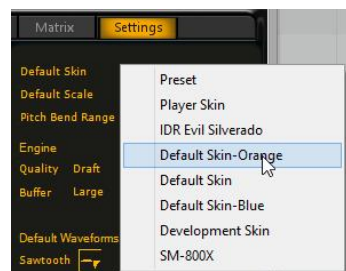
Keep in mind that the skin you choose for the current preset is saved within the preset data. So, for instance if you save your project in your DAW, and re-open it again, the skin for each SynthMaster instance will be remembered.

Changing Current Skin Globally

Normally, the skin name you select is saved within the preset's settings. Therefore you can have different skins for different presets. If you want to have a global skin that shows up all the time (regardless of the preset skin), just go to the global settings tab by clicking on the



button, and then change the default global skin by clicking on *Default Skin* dropdown:



Switching Back from Player Skins to SynthMaster Skins

If you switched to any of the Player skins you'll notice that those have different layouts compared to SynthMaster skins, since the Player has very limited editing capabilities:




If you want to switch back to SynthMaster skins again, you should:

1. Click on the left/right arrows (next to the parameter name) on the header to display the current value of the *Global Skin* parameter
2. Click on the left/right arrows (next to the parameter value) on the header to change *Global Skin* parameter's value:
3. Close and then reopen the skin



Browsing Presets

SynthMaster 2.6 comes with a comprehensive preset library, with more than 1000 presets to start with. To start browsing the presets, click on the  button:



When you select a preset from the list, it is loaded from disk, and its easy parameters are displayed. You can tweak the easy parameters right from the browser or using your MIDI controller's knob/sliders that are globally linked to the easy parameters.

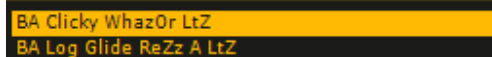
The presets can be filtered by


- Instrument Type
- Attributes
- Music Style
- Preset Author
- Bank Name


For instance, if you want to see all *Mono Bass Factory* presets for *Electro* music style created by *Aiyin Zahev*, click on Bass, Mono, Electro, Aiyin Zahev and then Factory Presets:



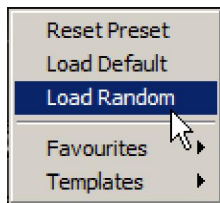
To load a preset on the list: click on it:



To go to the next preset on the list: click on the  arrow, or press the “Down” key on your keyboard, or move your mouse wheel down.

To go to the previous preset on the list: click on the  arrow, or press the “Up” key on your keyboard, or move your mouse wheel up.

To load a random preset from the list: click on the **New** button, and select “Load Random” menu item:



To clear all browser filters: Right click, and select “Clear browser filters” menu item:

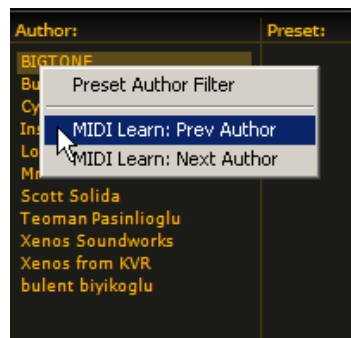
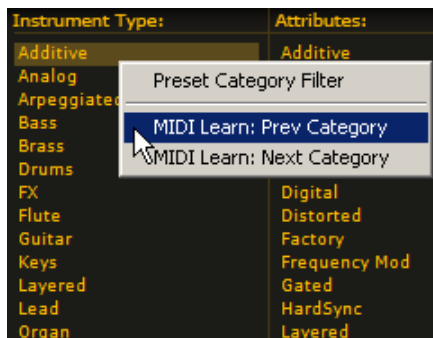


Controlling the Browser from your MIDI Controller

It is possible in SynthMaster to control the preset browser from your MIDI controller, by sending MIDI CC messages. You can assign buttons on your controller for scrolling up/down

- Instrument type
- Music style
- Preset Author
- Presets

To link a button to a list, move your mouse over the list, and then click on the right mouse button. The popup menu will show up with 2 selections: Prev and Next




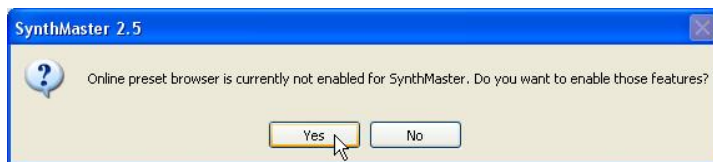
After you select one of the menu items, press the button on your MIDI controller to send the MIDI CC message, SynthMaster will learn the button and establish the link between the button and the browser function. SynthMaster saves this link in its configuration file, so you have to do this linking only once.

Online Presets

Aside from the “factory” presets that come with SynthMaster, starting with version 2.5 SynthMaster has now an “online” preset library where users can

- Upload their own presets to the online library
- Browse for presets in the online library
- Download presets from the online library

To browser for online presets: click on the  button. When you do this for the first time, SynthMaster will ask for your permission to connect to the web service:



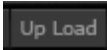
Click on the “Yes” button to continue. SynthMaster will connect to KV331 Audio web site and display online presets:



To download an online preset: just double click on the preset. It will be downloaded and stay in memory. To save the preset to your local preset library, simply click on the Save button to save the preset contents.

In case there are connection errors, SynthMaster will display an error message:




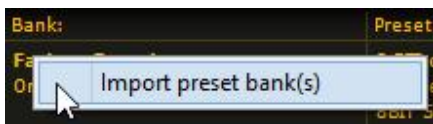
To upload the current (local) preset to the online library: click on the  button. During the upload process, the server makes some checks and might return an error back, such as preset metadata missing.

Importing Preset Banks Into SynthMaster

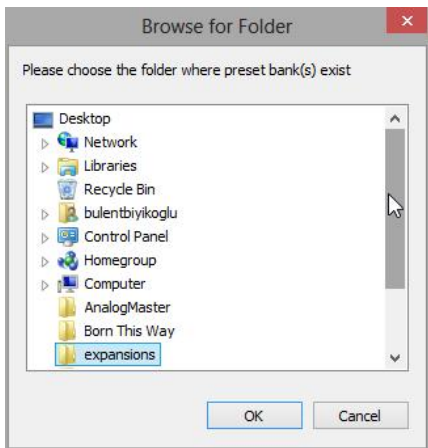
If you purchase preset banks from [our website](#), you will notice that most of them require manual installation (expect the ones that come with their own installers).

Starting with version 2.6.15, we've made it very easy to import those banks into SynthMaster:

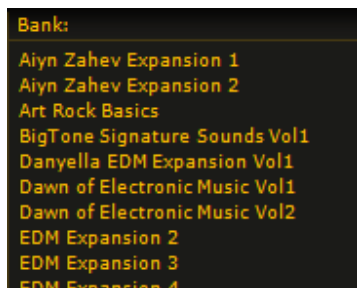
1. Click on the  button to display the preset browser
2. Move your mouse under the *Bank* list and right click. Popup menu will show up. Select *Import preset bank(s)* menu item:



3. Directory browser dialog will open up. Browse to the folder where you extracted the zip file that contains the preset bank files (that end with .smpb / .smar) and click OK to import the files:



4. If import is successful, the preset browser will be refreshed and you'll see the imported banks :



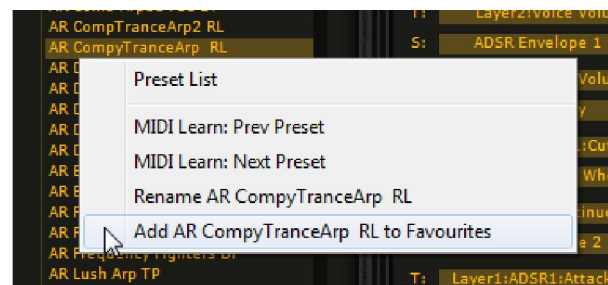
In case importing fails (due to write permission error), you can manually copy the preset bank file(s) (and the archive file(s) if the preset bank uses any custom samples/waveforms) to the following locations:

- Windows: **C:\Program Files\Vstplugins\KV331 Audio\Presets**
- MacOSX: **/Library/Application Support/KV331 Audio/SynthMaster/Presets**

Adding Presets to Your Favorites List

It is possible to mark the presets you like as 'favourites' so that you can easily load them again in your session. To add a preset to your 'favourites' list:

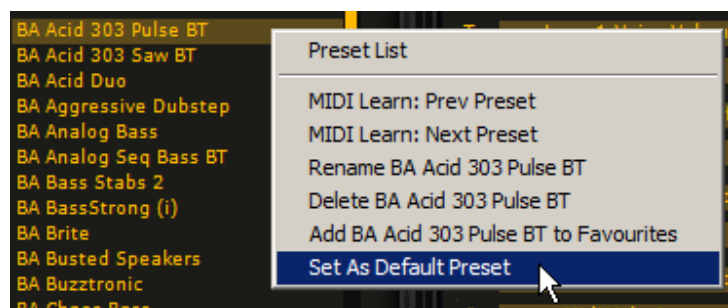
- Click on the preset name to choose the preset
- Right click on the preset name to bring up the dropdown menu
- Choose "Add to Favourites"



Assigning the "Default" Preset

"Default" preset is the preset that is loaded when a new instance of SynthMaster is created. To assign a preset as the "default" preset:

- Click on the preset name to choose the preset
- Right click on the preset name to bring up the dropdown menu
- Choose "Set As Default Preset"



Creating a New Preset

To create a new preset, click on the **New** button. A popup menu will be displayed. Choose “Reset Preset” to create a new preset with initial settings (init patch / sawtooth waveform)



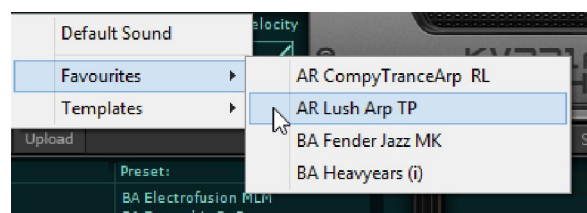
Loading the “Default” Preset

Instead of creating an empty preset with initial settings, you can load the “default” preset by clicking on the **New** button and then choosing “Load Default” menu item.



Loading a Preset from Your Favorites List

Instead of creating an empty preset with initial settings, you can load one from your ‘Favourites’ list, by clicking on the **New** button and then choosing a preset listed under the “Favourites” menu item.

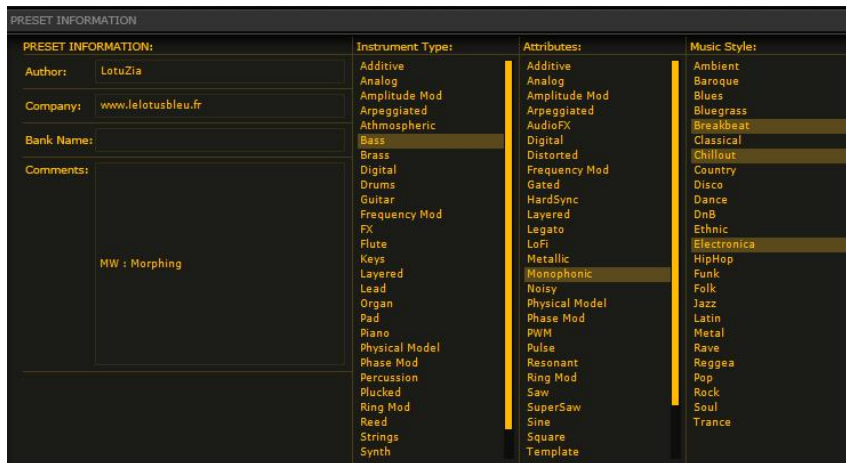


Preset Attributes (Metadata)

For each preset in SynthMaster, the following preset attributes are available:

- Author name
- Company name
- Bank Name
- Comments
- Instrument type
- Attributes
- Music Style


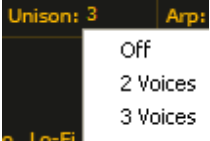

To edit the attributes, click on the **Preset** button. Please note that you can select multiple values for Instrument type, Attributes and Music Style:

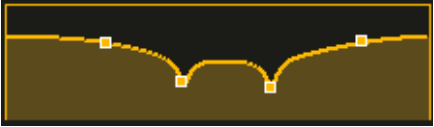

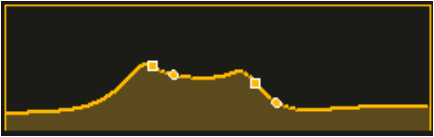


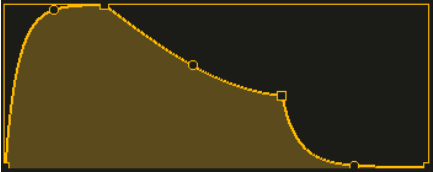





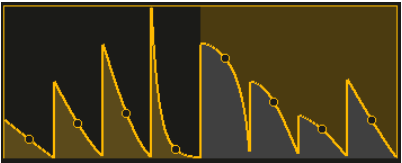





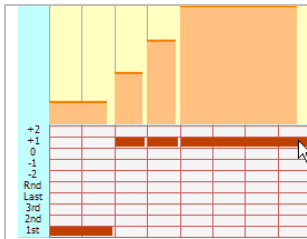
*TIP! If you select “Template” for Attributes, the preset will be shown in the list of template presets that show up when you click **New** button.*

Editing Preset Parameters

SynthMaster has many different types of user interface elements to edit parameters. Below we explain one by one how to use them:

Type	Description
Knob 	<ul style="list-style-type: none"> Knobs can either operate in <i>Linear</i> or <i>Circular</i> mode To operate in Linear mode: Left click close to the center of the knob, and then move your mouse in up/down direction. To operate in Circular mode: Left click around the outer ring of the knob, and then move your mouse in circular direction. Double Click resets the knob back to its default value Shift+ Left Click is used to edit the knob's value in a finer resolution. Mouse Wheel Up increases the knob's value by one step Mouse Wheel Down decreases the knob's value by one step
Dropdown 	<ul style="list-style-type: none"> Dropdown controls display a list of values to choose from. To select a value, click on the dropdown, the list will pop up. If you want to cancel your selection, just click on an area outside the list and it will go away. Double Click resets the dropdown back to its default value. Mouse Wheel Up selects the previous value in the list of values. Mouse Wheel Down selects the next value in the list of values.
Waveform Dropdown 	<ul style="list-style-type: none"> Waveform dropdowns are a subclass of dropdowns, and they operate in a similar fashion. Shift + Mouse Wheel Up selects (previous globally selected waveform dropdown value) +1 Shift + Mouse Wheel Down selects (previous globally selected waveform dropdown value) -1.
Toggle Button	<ul style="list-style-type: none"> Toggle buttons are basically On/Off buttons. Clicking on them toggles their state.

<p>Filter 1</p> <p>EQ Display</p> 	<ul style="list-style-type: none"> • Double Click resets the button back to its default value • EQ displays are used to show the frequency response of 2/4 Band EQs. The graph is in logarithmic scale on both axes. • By clicking on a point  on the graph, you can change the cutoff frequency (x-axis) or gain of a band (y-axis)
<p>Filter Display</p> 	<ul style="list-style-type: none"> • Filter displays are used to show the frequency response of various filter types used in SynthMaster. • By clicking on a point  on the graph, you can change the cutoff frequency (x-axis), or resonance (y-axis) • By clicking on a circle  on the graph, you can change the mode (x-axis) or slope (y-axis).
<p>ADSR Envelope Display</p> 	<ul style="list-style-type: none"> • ADSR Envelope displays are used to edit various parameters of ADSR envelopes. • By clicking on a point  on the graph, you can change the length (x-axis) or final value of an envelope stage. • By clicking on a circle  on the graph, you can change the slope (curvature) of an envelope stage.
<p>Multistage Envelope Display</p> 	<ul style="list-style-type: none"> • Multistage Envelope displays are used to edit various parameters of Multistage envelopes. • By clicking on a point  on the graph, you can change the length (x-axis) or final value of an envelope stage. • By clicking on a circle  on the graph, you can change the slope (curvature) of an envelope stage.
<p>Step/Glide LFO Display</p> 	<ul style="list-style-type: none"> • Step/Glide LFO displays are used to edit step volumes and slopes (curvatures) of Step/Glide LFOs. • By clicking on a step, you can change its volume. • By using the mouse wheel, you can change a step's volume • By clicking on a circle  on the graph, you can change the slope (curvature) of the corresponding step.
<p>Arpeggiator Display</p>	<ul style="list-style-type: none"> • Arpeggiator displays are used to edit step lengths, deltas and velocities of arpeggiators. • By clicking on  , you can edit the velocity of the corresponding step. • By clicking on  , you can edit the delta/note



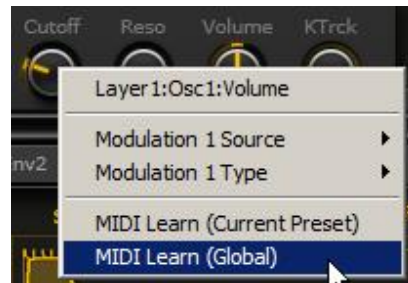
- number (y-axis) or length (x-axis) of a step.
- By using the mouse wheel, you can change the volume or note number/delta of a step.

Assigning Parameters to MIDI Controllers (MIDI Learn)

In SynthMaster, continuous parameters can be assigned to MIDI controllers. This assignment is achieved by the *MIDI Learn* feature in SynthMaster. Upto 32 assignments can be defined, and they are saved within the preset.

To Start MIDI Learn: Bring your mouse over the parameter (knob), and then right click to bring up the content menu.

Click on *MIDI Learn (Global)* or *MIDI Learn (Current Preset)* menu item, and then start moving the corresponding knob/slider/etc on your MIDI controller device to send MIDI Control Change (CC) messages. As soon as SynthMaster receives a CC message, it will assign that controller to the parameter.



To Remove MIDI Controller Assignment: Bring your mouse over the parameter (knob) that's linked to a MIDI controller, and then right click to bring up the content menu.

Click on the *Remove MIDI CC Link* menu item, and the assignment will be removed.



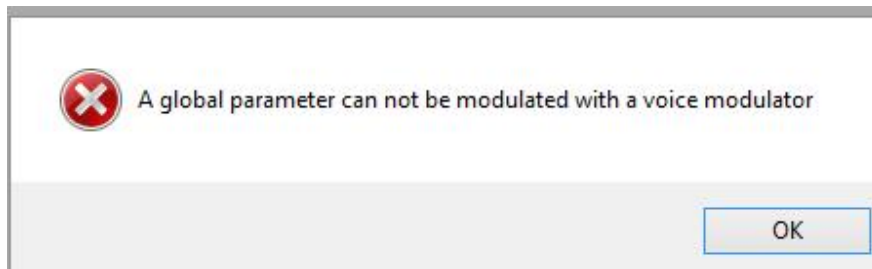
Assigning Modulation Sources for Parameters

In SynthMaster, continuous parameters (knobs) can be modulated by the following modulation sources:

MIDI sources	Global Sources	Voice Sources
Aftertouch	Audio Input Envelope	Voice LFOs 1-2
Velocity	Global LFOs 1-4	ADSR Envelopes 1-4
Controllers	Easy Controls 1-8	Multistage Envelopes 1-2
	Vocoder Bands 1-16	XY Envelopes 1-2
		Key Scalers 1-4
		Bipolar/Unipolar Random
		Alternating

The difference between Voice modulation sources and Global modulation sources is that a Voice modulation source operates on a certain voice parameter, such as Oscillator Tone, Filter Cutoff, etc..

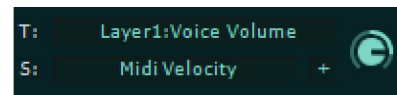
Therefore you cannot assign a Voice modulation source to any non-voice parameters and you get the following warning:



Modulating parameter values is an essential element in achieving time varying timbres in synthesizers.

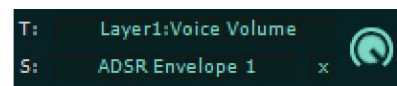
There are 2 types of modulation types:

+ Modulation: In this mode, the modulation amount is between -1 and +1. The center default value indicates zero modulation. The target parameter is calculate as:



Target = Target + (Mod Source X Mod Amount)

X Modulation: In this mode, the modulation amount is between 0 and 1. The target parameter is calculated as:



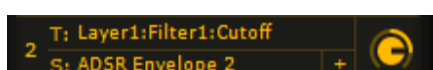
Target = Target x ((1-Mod Amount)+(Mod Amount X Mod Source))

TIP: For an Oscillator/Voice to turn off completely after they receive MIDI Note Off messages, you should modulate the Osc/Voice Volume with an envelope in X mode, and set the modulation amount to the max value 1. If the volume parameter has other modulation sources as well, the X modulation must be applied as the last modulation source.

To assign a modulation source for a parameter (knob), bring your mouse over the control (knob), and then right click to bring up the context menu:



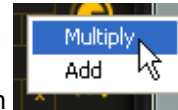
Once you decide on the modulation source, click on its menu item. The modulation matrix will also be updated to reflect the changes:



To change the modulation amount, click on the modulation amount knob





To change the modulation type, click on the modulation type dropdown



Modulation Matrix



When you add new modulations for each parameter, they are shown on the modulation matrix. The matrix has 8 pages each page displaying 8 entries. By clicking on the   arrows, or by using the mouse wheel, you can scroll through the matrix pages.

The matrix also has filtering functionality. By default, no filtering is applied, so all matrix entries are shown. To change the current display filter, click on the filter dropdown:



There are 4 display filter choices: None, By Modulation Source, By Modulation Target, and Automatic.

To see parameters modulated by a specific modulation source only:

source only: Select “By Source” from the display filter.

SynthMaster will display another dropdown below to select the modulation source. Select the source from this dropdown, and SynthMaster will only show the modulation targets for that source:



To see a specific parameter's modulation sources only:

Select “By Target” from the display filter. SynthMaster will display another dropdown below to select the modulated parameter (target). Select the modulated parameter (target) from this dropdown, and SynthMaster will only show the modulation sources for that parameter:



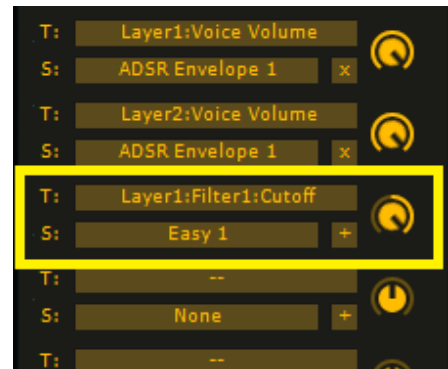
Automatic filtering: You can also select “Automatic” from the display filter. In that case, the source/target filters are set automatically, when you click on any knob. For instance, if you want to see modulation entries for Layer1:Filter1:Cutoff only, click on the cutoff knob and SM will display entries for that parameter only.



Easy Parameters

SynthMaster has more than 3000 parameters. This might look quite complicated at first! But using the 12 “easy” parameters, you can control the most important parameters using those 12 “easy” parameters.

Easy parameters are also modulation sources in SynthMaster, so to assign an easy parameter to any parameter, bring the mouse over the parameter, and right click



Aside from the 8 easy knobs, there are 2 xy pads which are also used as easy parameters. For any of the 12 easy parameters, you can rename each, and give them meaningful names for the current preset:

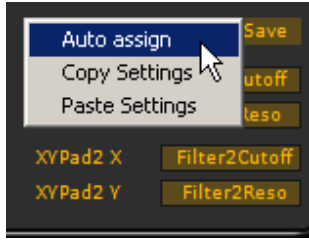


TIP: When you link easy parameters to MIDI controllers, those links are saved globally, so that you don't have to link easy parameters for each preset.

TIP: To see all parameters modulated by a certain easy parameter, choose “Automatic” mod matrix filter, and click on the easy knob!

Assigning Easy Parameters Automatically

Since figuring out which parameters to choose for easy parameters might be a problem, we have developed an algorithm in SynthMaster to do the assignment automatically for you. To assign the easy parameters for the current preset settings, click on the **Preset** button, and then click on the dropdown list next to the xy pads. Choose “Auto Assign” from the menu:

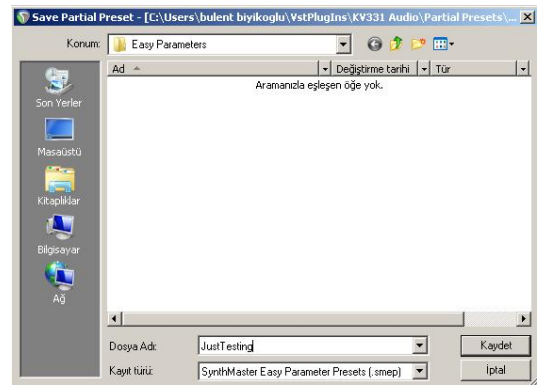


Easy Parameter Presets

Since you might want to use the same easy parameter assignments for different presets, SynthMaster allows you to save your current easy parameter assignments, and then load them back to other presets.

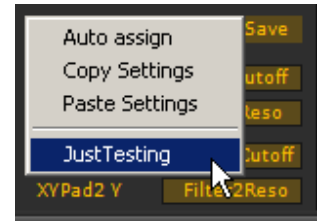
To save current easy parameter assignments:

Click on the **Preset** button, and then click on the **Save** button (next to the xy pads). After entering preset name, SynthMaster will save it:



To load an existing easy parameter preset:

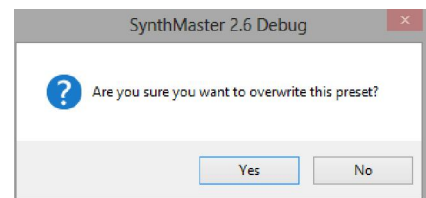
Click on the easy parameter preset dropdown, and select an easy parameter preset:



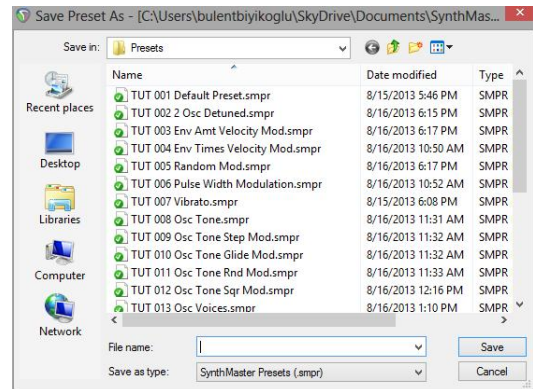
Saving Presets

Once you're done editing preset parameters and attributes, it's time to save them in preset files. To save a preset, you can either press **Save**, or **SaveAs** buttons.

If you click on the **Save** button, SynthMaster will ask you whether you want to override the existing preset:



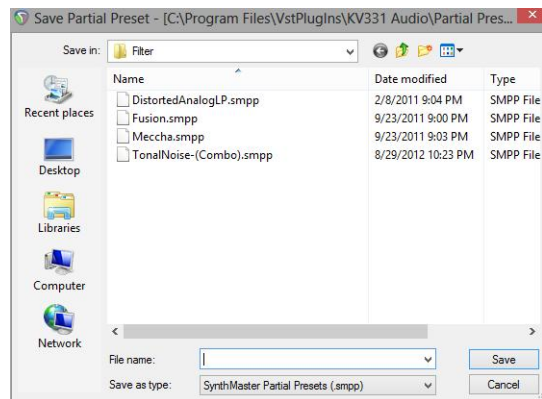
If you click on the **SaveAs** button, SynthMaster will ask you to enter the name of the new preset:



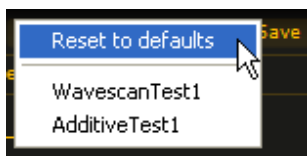
Saving “Partial” Presets

SynthMaster supports saving settings for separate modules (Osc, Mod, Filter, Chorus, Reverb, etc...) as “Partial” Presets.

To Save the settings for a module, click on the **Save** button. SynthMaster will ask you to enter the new of the new preset:



To load the settings back for a module, click on the **Reset to defaults** button. A popup context menu will list presets for that module. If you select the first menu item “Reset to defaults” the parameter values for that module will be reset back to their default values:



Engine Settings

In SynthMaster, there are 2 settings that affect the rendering of audio for each SynthMaster instance:

Engine:
Quality: Draft
Buffer: Normal

Engine Quality changes the internal sampling rate. It can take 4 different values: *Draft* (x1), *Good* (x2), *Better* (x3), *Best* (x4)

Engine Buffer Size changes the smallest buffer size length at which the internal LFOs, envelopes etc are recalculated. It can take 5 different

values: *Short*, *Normal*, *Large*, *XLarge* and *XXLarge*

TIP: Global engine settings always override preset settings.

Microtuning/Scala Support

Each SynthMaster instance can have its custom tuning, loaded from a [Scala tuning file](#):




The tuning definition files in Scala format (.scl) are placed under:

- Windows: **C:\Program Files\VstPlugins\KV331 Audio\Scales**
- MacOSX: **/Library/Application Support/KV331 Audio/SynthMaster/Scales**
-

If you want to use different tunings, please copy the scale files (that end with .scl) into the above folders.

By default, "EqualTempered" is the default tuning for each instance.

Global Engine Settings

Under the  tab, the following global engine settings can be adjusted:



Default Skin changes the skin globally. If set to *Preset*, the preset skin takes effect. When the skin is changed, the plugin window(s) must be closed and reopened.

Default Scale changes the tuning (scale) globally. If set to *Preset*, the preset scale takes effect.

Pitch Bend Range changes the pitch bend range globally. If set to preset, the preset pitch bend ranges take effect.

Engine Quality changes the internal oversampling rate globally. If set to *Preset*, the preset quality takes effect.

Engine Buffer Size changes the internal buffer size globally. If set to *Preset*, the preset buffer size takes effect.

Default Waveforms (Sawtooth, Square, Triangle) change the wavetables of basic waveforms globally. So if you import single cycles of a specific analog synthesizer for instance, you can globally set basic waveforms as those single cycles.

Antialiased Drawing is used to turn on/off high resolution drawing of many of the display views on the plugin window

MIDI CC Filter Lag is used to set the lag (length) of the smoothing filter that's used to filter the incoming MIDI CC signals.

SynthMaster 2.6 Architecture

The architecture in SynthMaster consists of 2 layers followed by 2 global effect send busses. The effect routing is totally flexible, as seen below. The effects can be inserted by right clicking on the insert and choosing the effect from the dropdown menu. An insert effect can be activated/bypassed by left clicking on it:



Layers

Each layer in SynthMaster has

- 2 oscillators with multiple synthesis algorithms:
 - Wavetable/VA
 - Wavescanning
 - Sample-Playback (SFZ)
 - Additive

- Vector
 - Noise
 - Pulse
 - Hard Sync: Osc 2 can be hard synced to Osc1 (not available for Sample Playback synthesis)
- 4 modulators (sub oscillators) that can modulate frequency, phase or amplitude of each oscillator, or other modulators. This makes it possible to implement the following types of modulations at audio rate:
 - Frequency Modulation
 - Phase Modulation (not available for Sample-Playback oscillators)
 - Pulse Width Modulation (using Pulse osc type)
 - Amplitude Modulation (through adding DC Offset/Bias to Modulator output)
 - Ring Modulation (when DC Offset/Bias of Modulator is zero)
- 2 Filters with mainly 2 algorithm categories:
 - Digital: Digital filters are biquad filters that have a hard limiter in their outputs. At high resonance values, their output will be clipped by the limiter.
 - Lowpass (12/24 db/oct slope)
 - HighPass (12/24 db/oct slope),
 - LowShelve (12/24 db/oct slope)
 - HighShelve (12/24 db/oct slope)
 - BandPass (6/12 db/oct slope)
 - BandStop (6/12 db/oct slope)
 - Peaking (6/12 db/oct slope)
 - MultiMode (12 db/oct, mode sweepable between lowpass/bandpass/highpass slope)
 - Dual (12 db/oct slope, parallel/series combination of 2 digital MultiMode filters slope)
 - Comb (useful for physical modeling algorithms)
 - Analog: Analog filters are modeled after the famous ladder filter. They have continuously variable slope, unlike the digital filters with fixed slope. At high resonance values, the filters self-oscillate:
 - Lowpass (0-24 db/oct slope)
 - HighPass (0-24 db/oct slope),
 - LowShelve (0-24 db/oct slope)
 - HighShelve (0-24 db/oct slope)
 - BandPass (0-12 db/oct slope)
 - BandStop (0-12 db/oct slope)
 - Peaking (0-12 db/oct slope)

- MultiMode (0-24 db/oct slope, mode sweepable between lowpass/bandpass/highpass)
 - Dual (0-24 db/oct slope, parallel/series combination of 2 analog MultiMode filters)
- Mono/Legato/Poly voicing (64 voices single layer, 32 voices dual layers)
- Up to 8 voices unison.
 - In Unison mode, numbers of voices don't decrease.
 - For unison, there are separate spread parameters (cutoff, detune, pan, wave index) as well as a "unison index" parameter available as a modulation source.
- 5 Insert effects: The effects can be any of the following: Distortion, LoFi, Compressor, Phaser, Ensemble, 6 Band EQ, Chorus, Tremolo, Echo (Delay), Vocoder, Reverb
- Arpeggiator/Sequencer
 - Has classic modes Up/Down/UpDown/DownUp/AsPlayed/Chord, as well as Sequence and Arpeggiate modes (the last one being unique to SynthMaster)
 - The number of steps can be between 0 and 32.
 - Each step has the following parameters: velocity, length (between 1-32), hold, slide, note number (for sequence mode), delta (for arpeggiate mode)
 - Monophonic/Polyphonic (chord) sequences can be imported into the arpeggiator by dragging and dropping MIDI files onto the arpeggiator view, or by selecting "Import MIDI Pattern" from Arpeggiator presets menu.
- A wide range of modulation sources, available for all knobs:
 - Voice sources:
 - 4 Keyscalers
 - 4 ADSR envelopes
 - 2 Multistage envelopes (up to 16 points)
 - 2 2D envelopes (up to 16 points)
 - 2 Voice LFOs
 - MIDI Velocity
 - Unison Index
 - Bipolar/Unipolar Random
 - Alternating
 - Global (synth) sources:
 - 4 Global LFOs
 - 12 Easy parameters
 - 16 Vocoder bands
 - MIDI Controllers, Channel Aftertouch, Pitch Wheel

Oscillators

There are 5 types of oscillators in SynthMaster:

- Basic
- Additive
- Vector
- Wavescanning
- Audio In

The first 4 of those 5 oscillator types share the following common parameters:

- Pitch (Coarse Tune)
- Fine Tune
- Volume
- Drift Amount/Speed: Using drift amount/speed, osc pitch can be randomly modulated.
- Pitch Keytracking Base/Amount

Basic Oscillator



Basic oscillator can synthesize the following types of waveforms:

- Sine
- Square, Triangle, Sawtooth
- Pulse
- Noise
- Any single cycle wavetable
- WAV/AIFF samples defined in SFZ files

- By pressing the *Free* button, the osc can be made “free running”, so that the osc start phase starts at a random value when a new note starts. That is the behavior of analog oscillators.
- By increasing *Voices*, up to 8 copies of the same waveform (be it a single cycle or WAV/AIFF sample) can be played back simultaneously. By increasing *Detune Spread* (Detune) and *Stereo Spread* (Stereo), this gives a rich unison effect.
- The *Tone* parameter is used to apply a sharp lowpass filter to the osc output. For WAV/AIFF samples it has no effect. For Noise waveforms, it is a 1st order lowpass filter.
- The *Phase* parameter is used to set the start phase of the oscillator waveform. For Noise waveforms, it is used to add a constant DC offset to the oscillator output. For WAV/AIFF samples, it is used to change the start position of the sample.

- The osc's phase (pulse width) or frequency can be modulated at audio rate by *FM Src* parameter, while its amplitude can be modulated at audio rate by *AM Src* parameter. The following can be modulation sources:
 - Modulator 1
 - Modulator 2
 - Modulator 1+Modulator 2
 - Modulator 1xModulator 2
 - Modulator 3
 - Modulator 4
 - Modulator 3+Modulator 4
 - Modulator 3xModulator 4
 - Audio Input

Additive Oscillator

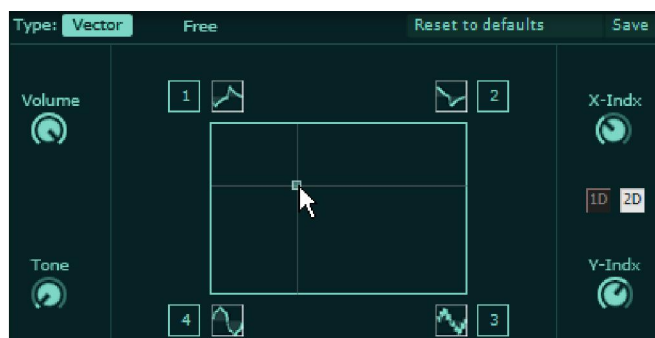


Additive oscillator is nothing but 8 basic oscillators running together!

Each basic oscillator has its own:

- Volume
- Pan
- Detune
- Tone
- Phase
- Waveform type (Sine, Square, Triangle, Saw, Pulse, Noise, Wavetable, SFZ)
- Frequency

Vector Oscillator



Vector oscillator is a subset of Additive oscillator. There are 4 basic oscillators running together.

The mix ratios of oscillators are determined by the x and y indexes and 1D/2D buttons (For classical vector synthesis, 2D is on by default)

Wavescanning Oscillator

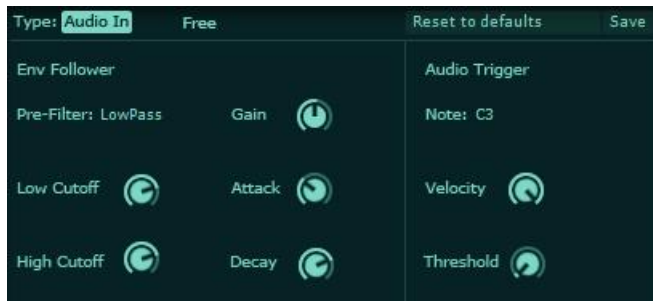


Wavescanning oscillator is similar to basic oscillator, except that the waveform can be scanned (interpolated) in between 16 different waveforms shapes.

The position of the waveform can be adjusted using the *wave index* parameter

The number of waveforms to scan can be adjusted by clicking on the *# of Waves* dropdown.

Audio-In Oscillator

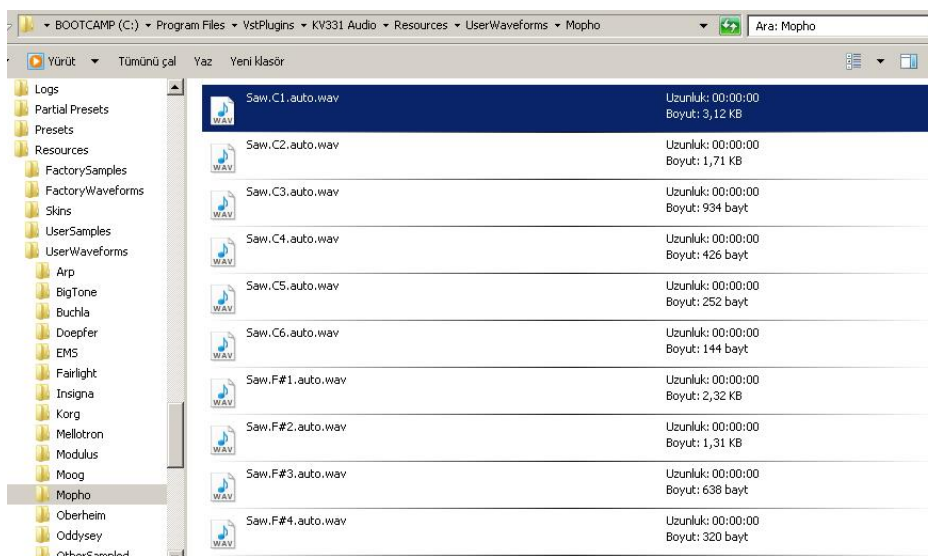


Audio-In oscillator is used to pass the incoming audio input of SynthMaster through its oscillators/filters/effects/etc.

SynthMaster features an envelope follower as well, which can trigger a MIDI note when the follower output is above a certain threshold. This way the internal oscillators/filters/effects etc can be used to process the incoming audio in various ways.

Importing Single Cycle Waveforms

SynthMaster supports importing your own single cycle waveforms into its engine. You can even import multiple single cycles taken at different root keys. The below screenshot shows how the default waveforms in SynthMaster are imported:



So basically, to import your single cycles, you should place your single cycle WAV/AIFF waveforms under:

<My Documents Folder>\SynthMaster\Waveforms

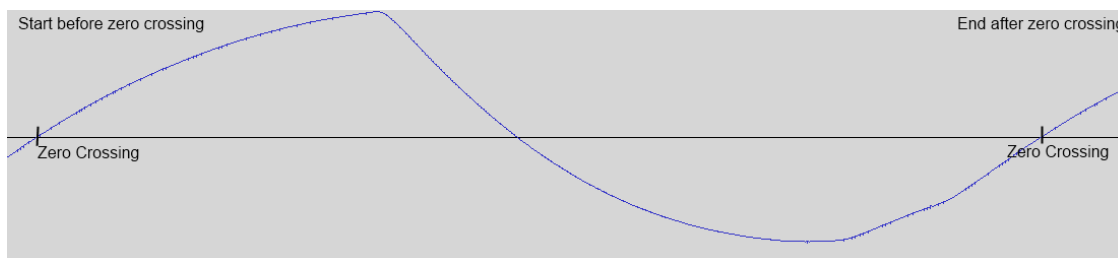
If you have multisamples, they should be named as

- <Waveform>.<Root Note>.<file extension>
- Or <Waveform>.<Root Note>.auto.<file extension>

For instance, if you look at the above screenshot, the default waveforms are named as:

- Saw.C1.auto.wav
- Saw.F1.auto.wav
- Saw.C2.auto.wav
- Etc...

“auto” in the file name is used to indicate that SynthMaster will detect the period start/end positions. For it to work correctly, the waveform should start before a zero crossing, and end after a zero crossing, as shown below:



When importing multiple single cycles, SynthMaster takes care of resampling, filtering and phase alignment of the multisamples automatically, using spectral (FFT/IFFT) processing.

TIP: Currently, the maximum period length SynthMaster supports is 2048 samples.

Importing WAV/AIFF samples as SFZ Instruments

In SynthMaster, it is possible to import single/multisampled WAV/AIFF files onto SynthMaster as SFZ Instruments, which can be played by any oscillator/modulator.

SynthMaster can read the root note information from each WAV/AIFF file. It can also read loop start/end points, so you don't have to worry about those if they are defined in the WAV/AIFF header.

If you are importing multisamples, and they don't have root notes defined in the WAV/AIFF headers, you can do that by renaming the files in the following way:

- Multi1.C1.wav
- Multi1.G1.wav
- Multi1.D2.wav
- Multi1.A2.wav...



To import the file(s), simply do the following:

1. Drag and drop your WAV/AIFF file(s) on to the oscillator waveform view (or alternatively choose “Import Multisamples as SFZ” from osc waveform dropdown menu)
2. Enter the name of the SFZ file to create, and save!

Modulators

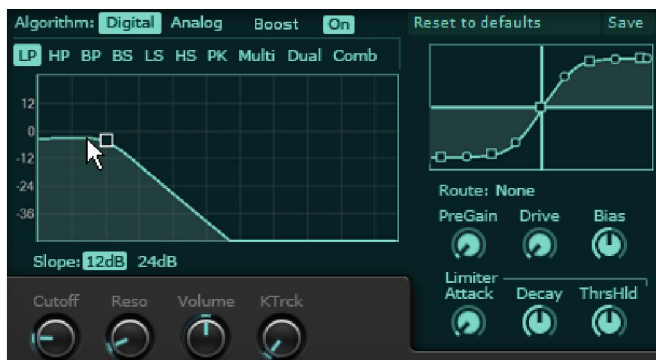


A modulator is essentially a “basic” oscillator, but it is not heard directly. It is used to modulate frequency, phase (pulse width for pulse) or amplitude of Osc 1/2 or other modulators.

The only extra parameter a modulator has is the “DC Offset” parameter, which is used to add a constant value to the modulator output. This is useful in Frequency Modulation and Ring Modulation (which then becomes Amplitude Modulation when offset is added)

Filters

In SynthMaster, each layer has 2 filters. Each filter has 2 main algorithm categories.



Digital filters are biquad filters that have a hard limiter in their outputs. At high resonance values, their output will be clipped by the internal limiter.

The limiter’s envelope follower has 3 parameters: *attack*, *decay* and *threshold*.

The *drive* parameter is used to boost the filter output before it enters the hard limiter, so that the signal can be distorted by the hard limiter.

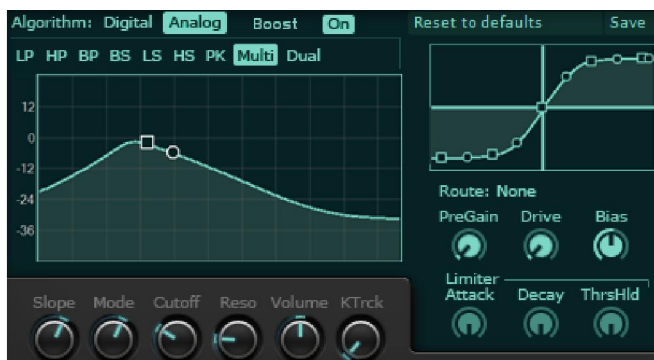


Analog filters are modeled after the famous ladder filter. They have continuously variable slope, unlike the digital filters with fixed slope (I believe this is a feature unique to SynthMaster). At high resonance values, the filters self-oscillate.

PreGain parameter is used to boost the filter's input, so that the boosted signal can be distorted inside the four filter stages.

Drive parameter is used to boost the signal within the four filter stages. It is useful when combined with *PreGain* and *Resonance* parameters.

Aside from the standard Lowpass, Highpass, BandPass, BandStop, Peaking, LowShelve and HighShelve filters, SynthMaster features 3 extra filter types: MultiMode, Dual, and Comb:



MultiMode filters have variable *Mode* parameter, sweepable between LowPass, BandPass and HighPass modes continuously.



Dual filters are two MultiMode filters that are running together, in parallel/series. Each filter has its own cutoff/slope/mode parameters although they share the same resonance parameter.

Mix 1-2 parameter determines the mix ratio of the two filter outputs

Topology determines the series/parallel mix of the two filters. At min value the topology is series while at max value it is parallel.



Comb filters are a kind of digital filters that are used in physical modeling of musical instruments.

Cutoff parameter determines the delay line length of the comb filter

Feedback parameter determines the feedback amount of the comb filter.

Damping parameter determines the cutoff frequency of the lowpass filter in the feedback path of the comb filter.



A distortion stage can be inserted before, after or even inside the filters. "Inside Filter" mode is applicable to Analog filters, Comb filters and Dual filters.

Bias parameter is used for adding a constant offset to the input of the distortion stage. This is useful for adding even harmonics to the distortion output.

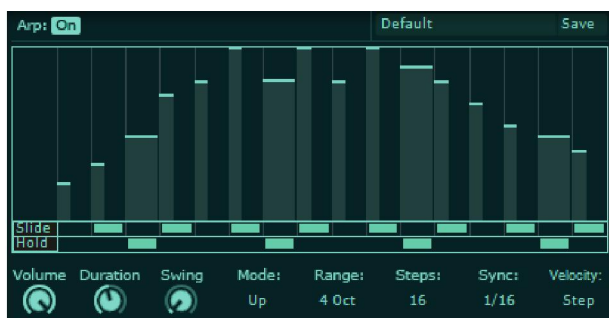
The distortion curve can be edited by the user.

Arpeggiator

SynthMaster features a very powerful arpeggiator, with up to 32 steps each step having its own

Velocity, *Length*, *Slide*, *Hold*, *Delta* (used in Arpeggiate mode) and *Note number(s)* (used in Sequence mode)

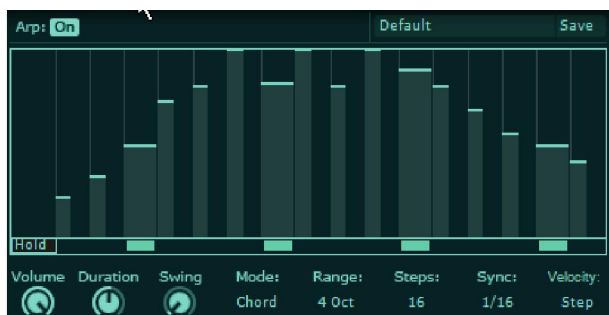
The arpeggiator works in the following modes:



Classic modes: (Up, Down, UpDown, DownUp, UpDown2, DownUp2, As Played)

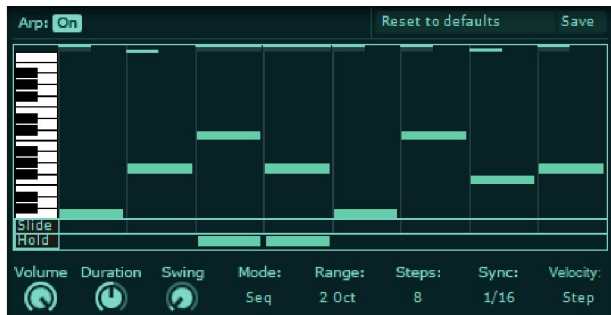
In the above classic modes, one note at a time is played. In *As Played* mode, the notes are played in the order they are pressed.

When the layer voicing is in *Mono* mode, *Slide* of each step can be used to create slide (portamento) between successive notes.



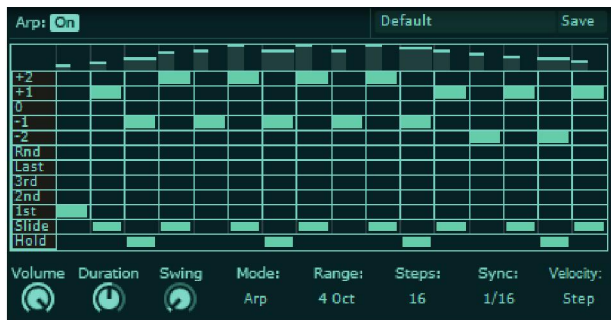
Chord mode

In Chord mode, all notes pressed are played simultaneously according to the step lengths/velocities.



Sequence mode

In sequence mode, you can create monophonic sequences with up to 32 steps.

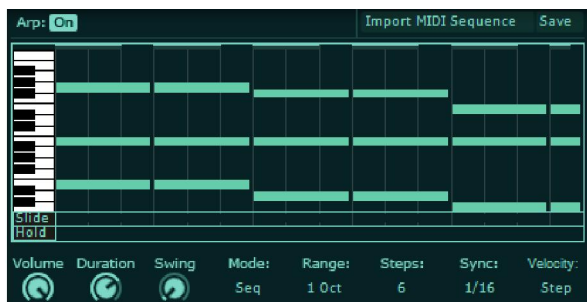


Arpeggiate mode

This mode is unique to SynthMaster. In Arpeggiate mode, you can adjust the successive note increments/decrements, within the set of notes you pressed.

Importing MIDI Sequences Into Arpeggiator

It is possible to import monophonic or even polyphonic (chord) MIDI sequences into the arpeggiators in SynthMaster



To import the MIDI sequence, there are 2 ways:

1. Drag and drop the MIDI file on to the arpeggiator view.
2. Select "Import MIDI Sequence" from the arpeggiator presets menu, then select the MIDI file to import.

When the MIDI data is imported, the mode is set to Sequence, and the *Number Of Steps*, *Gate Duration* and *Sync Speed* parameters are calculated automatically from the MIDI data.

TIP: Before importing the MIDI file make sure you quantize the note durations!

Effects

6 Band EQ

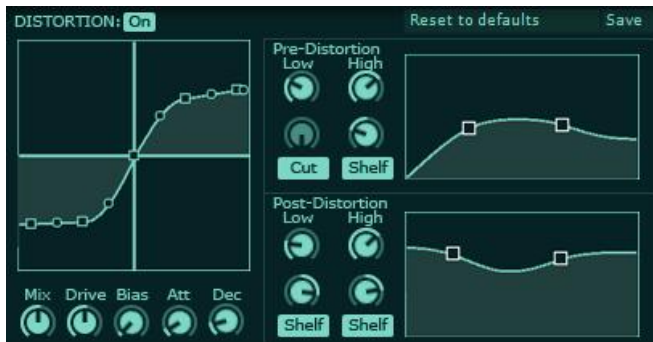


The Highpass and Lowpass bands of the EQ can have a slope between 12-48 db/octave. They can be turned on/off.

The LowShelve, HighShelve bands have 6dB/oct slope.

The Lo Mid, Hi Mid bands have 6 db/oct slope, with variable Q.

Distortion



The Distortion effect in SynthMaster consists of a 2 Band EQ followed by a distortion stage followed by a 2 Band EQ.

The EQ Bands can be cut or shelve.

The distortion curve can be drawn by the user.

The distortion effect has also an envelope follower whose output can be used to add a *bias* to the distortion stage.

LoFi



The LoFi effect is used to apply bit reduction and sample rate reduction (through sample and hold)

The output bits can be controlled by the *Bits* parameter

The output sample rate can be controlled by the *S-H* parameter.

The effect also has a resonant filter that has *Cutoff* and *Reso* parameters.

Phaser



The Phaser effect is 4-8-12-16 stage analog modelled phaser.

With the *Feedback* parameter, the phaser output can be feedback to its input.

Initial Cutoff, and *Cutoff Spacing* parameters can be modulated by the internal LFO of the phaser. The speed of the LFO can be controlled with the *Speed* parameter.

The internal LFO has stereo output, L-R outputs can have different phases or speeds controllable by *L/R Phase*, *L/R Ratio* parameters. The LFO speed can be synced to the tempo as well by turning on *Sync* parameter.

Chorus



Chorus effect is used to add time varying delays to its stereo inputs.

The amount of delay modulation is controlled by *Mod Depth* parameter.

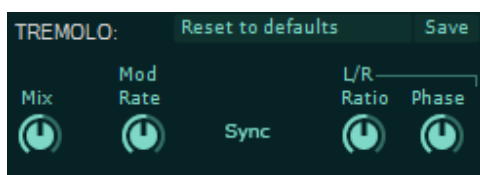
The delay modulation speed is controlled by *Mod Rate* parameter.

The feedback of the delayed output can be controlled by the *Feedback* parameter.

The internal LFO has stereo output, L-R outputs can have different phases or speeds controllable by *L/R Phase*, *L/R Ratio* parameters. The LFO speed can be synced to the tempo as well by turning on *Sync* parameter.

The stereo width of the chorus output is controlled by *Width* parameter.

Tremolo



Tremolo effect is used to modulate the amplitude of its stereo inputs.

The internal LFO of the effect is used for amplitude modulation

The internal LFO has stereo output, L-R outputs can have different phases or speeds controllable by *L/R Phase*, *L/R Ratio* parameters. The LFO speed can be synced to the tempo as well by turning on *Sync* parameter.

Ensemble



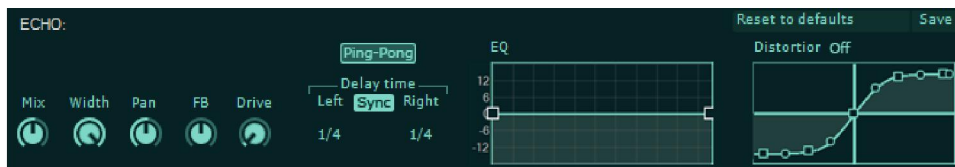
The ensemble effect is up to 8 voices running in parallel at different delay modulations.

There are 2 LFOs at 2 different speeds that can modulate the initial delay/delay spacing..

Each LFO has multiple outputs, at different phases. *Phase* parameter controls the phase difference of each LFO output. LFOs can modulate the delay or spacing of each voice.

The stereo width of the ensemble output is controlled by the *Width* parameter.

Delay



Delay effect is used to add EQed and/or distorted delay to its stereo inputs.

The delayed + EQed Left/Right signals can be feedback using the *Feedback* parameter, creating Echo.

When *PingPong* button is pressed, left output is feedback to right input, and right output into left input vice versa.

The 2 Band EQ is used to filter the delayed outputs.

The distortion stage after the EQ can be turned on/off.

The stereo width of the delay outputs is controlled by the *Width* parameter.

Reverb



SynthMaster features a powerful Reverb effect, used to simulate rooms/spaces

Early/Late EQs are used to change the tonal characteristics of the early/late reflections of the effect.

Eary/Late reflection mix ratios can be controlled using the *E/L Mix* parameter.

The (late reflections) reverb time (time it takes to decay 60 dB) is controlled using the *Reverb Time* parameter.

The *Room Size* parameter calculates the early reflection tap delays/gains behind the scenes.

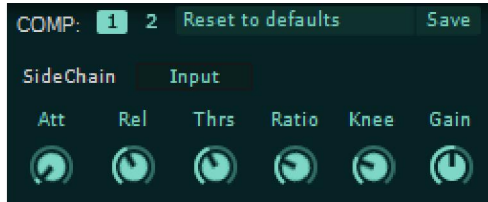
The *Distance* parameter controls the distance between the listener and the reverb inputs.

The *Damping* parameter controls the high frequency loss that takes place when reflections in a room bounce off of walls.

The *Mod Amount*, *Mod Speed* parameters control the amount and speed of random modulations that

slowly change the delay line lengths within the reverb algorithm.

Compressor



Compressor effect is used for dynamic gain reduction.

The *Ratio* parameter controls the compression ratio, that is between 1:1 – 1:20 (in dB)

The *Threshold* parameter controls the level at which compression starts.

Knee controls the smoothness of the compression curve. At zero value, the compression curve is the sharpest.

Vocoder



The vocoder in SynthMaster consists of 16 analysis and 16 synthesis filters (1 LP + 14 BP + 1 HP)

The analysis filters are at fixed frequencies (similar to analog vocoders). The initial frequency and frequency spacing of the synthesis filters, on the other hand, can be controlled by *Start Frequency* and *Frequency Spacing* parameters.

The analysis filter outputs are displayed on the Modulator Spectrum display. They can also be used as global (synth) modulation sources.

Modulation Sources

Each layer in SynthMaster has the following voice modulation sources, which are available separately for each voice (as opposed to global modulation sources such as MIDI CC, synth LFOs, etc):

- 4 ADSR envelopes
- 2 Multistage envelopes (up to 16 points)
- 2 2D envelopes (up to 16 points)
- 2 Voice LFOs
- 4 Keyscalers
- MIDI Velocity
- Unison Index
- Bipolar/Unipolar Random
- Alternating

ADSR Envelopes

There are 4 ADSR (Attack, Decay, Sustain, Release) envelopes available for each layer voice as a modulation source. The output of the envelope is unipolar (between 0.0-1.0). The envelope has basically 3 stages: Attack, Decay (ending in sustain), and Release.



Attack (time) controls the time it takes to reach from initial envelope level to the attack level.

Decay (time) controls the time it takes to reach from attack level to sustain level. When the envelopes reaches the *sustain level*, the envelope stays at that level until the voice receives a MIDI note off message (if Hold pedal is pressed the envelope stays at sustain level until the pedal is released)

Release time controls the time it takes to reach from sustain level to final level.

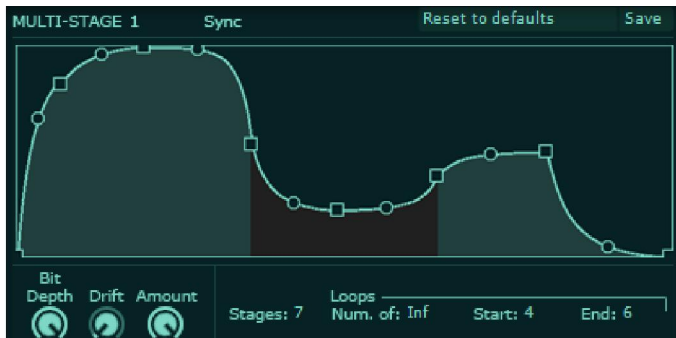
Envelope amount controls the volume of the envelope (It's useful for modulating envelope output with other sources such as MIDI velocity)

By using *Bit Depth*, the output bit depth of the envelope can be quantized between 2-24 bits.

By using *Drift*, the output volume of the envelope can be slightly modulated by a random glide LFO.

Multistage Envelopes

There are 2 Multistage envelopes available for each layer voice as a modulation source. The output of the envelope is unipolar (between 0.0-1.0).



Number of stages sets the number of envelope stages. Each stage has 3 parameters: *Length*, *Slope*, and *Final Value*.

A loop can be defined between 2 segments by setting *Loop Start* and *Loop End* parameters. The loop can repeat itself either indefinitely, or between 1-32 times, based on the *Number of Loops* parameter.

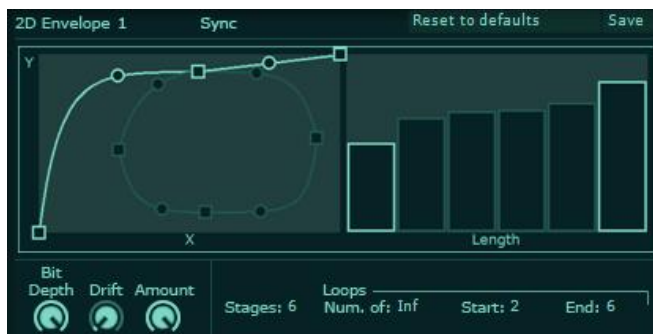
Envelope amount controls the volume of the envelope (It's useful for modulating envelope output with other sources such as MIDI velocity)

By using *Bit Depth*, the output bit depth of the envelope can be quantized between 2-24 bits.

By using *Drift*, the output volume of the envelope can be slightly modulated by a random glide LFO.

2D Envelopes

2D envelopes are similar to multistage envelopes, but with one major difference: They are 2 dimensional and therefore have 2 separate outputs, X and Y.



Number of stages sets the number of envelope stages. Each stage has 3 parameters: *Length*, *Slope*, and *Final Value*.

A loop can be defined between 2 segments by setting *Loop Start* and *Loop End* parameters. The loop can repeat itself either indefinitely, or between 1-32 times, based on the *Number of Loops* parameter.

The length of each stage can be set by adjusting the bars on the right side of the envelope view.

Envelope amount controls the volume of the envelope (It's useful for modulating envelope output with other sources such as MIDI velocity)

By using *Bit Depth*, the output bit depth of the envelope can be quantized between 2-24 bits.

By using *Drift*, the output volume of the envelope can be slightly modulated by a random glide LFO.

LFOs

There are 2 LFOs (Low Frequency Oscillators) available for each layer voice as a modulation source. The output of the LFO can be either bipolar (between -1.0 +1.0) or unipolar (between 0.0-1.0), based on the *Bipolar* parameter's value.

There are 3 LFO types in SynthMaster:

1. Basic LFO
2. Step LFO
3. Glide LFO

For all 3 types, the LFO has a 2 stage Attack/Release envelope: Attack Slope/Time and Release Slope/Time parameters are available for the envelope.

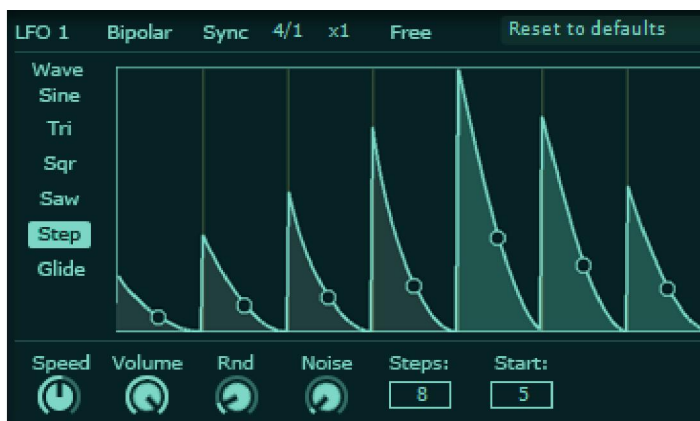


Basic LFO can have one of the 4 basic wave shapes: *Sine*, *Triangle*, *Square* and *Sawtooth*

The LFO start phase can be controlled by adjusting the *Phase* parameter.

The LFO speed can be controlled by adjusting the *Speed* parameter.

The LFO speed can be synced to host tempo by turning on *Sync* parameter. If *Sync* is on, *Speed* parameter multiplies the synced speed (between 1/128 – 128/128)



In *Step LFO mode*, *Steps* parameter controls the number of steps the LFO has, while *Loop Start* controls the loop start step. The loop end step will always be the last step.

The duration of each step is controlled by the *Speed* parameter.

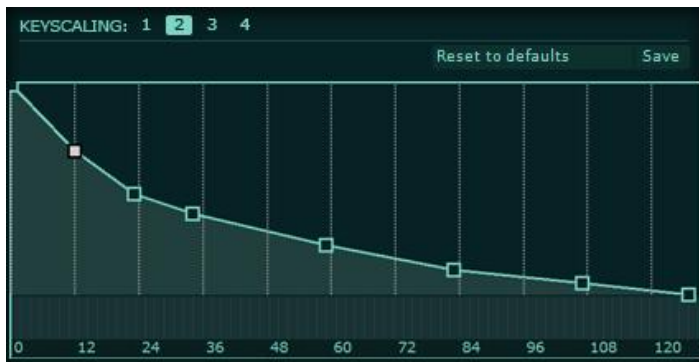
By turning on *Sync*, step durations can be synced to host tempo. If *Sync* is on, *Speed* parameter multiplies the synced speed (between 1/128 – 128/128)

For each step, there are 2 parameters: *initial value*, and *slope*. The final value of the step is always zero.



Glide LFO mode is very similar to *Step LFO*, with one exception: The final value of a step is the initial value of the next step.

Keyscalers



Keyscalers are used to modulate parameter values based on the current MIDI note number.

The keyscaler graph can have up to 16 points, and the graph determines the scaling for each MIDI note between 0-127. The scaling amount is unipolar, between 0.0-1.0